

CSED 490C

LAB1

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Q1

a)

There is only one floating point operation being performed in `vecAdd` kernel function in each call. The floating point operation occurs when adding two inputs.

b)

There are $2 \times \text{inputLength} \times \text{sizeof(float)}$ bytes of global memory read occurred when copying the input1 and input2 data from the host memory.

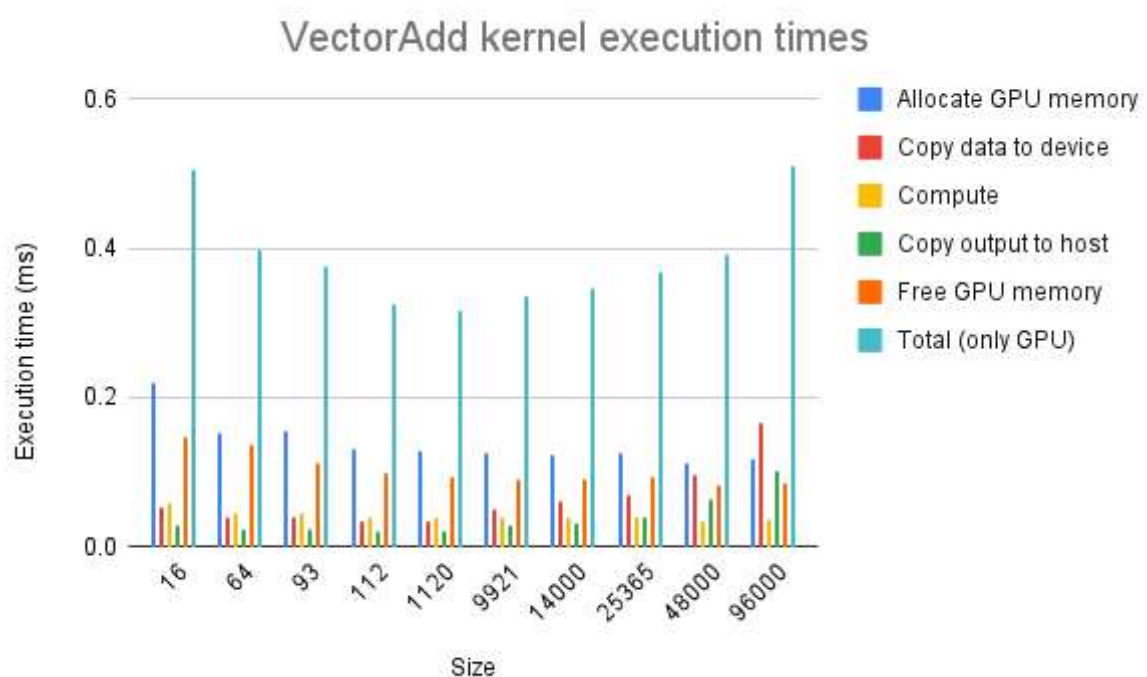
c)

There are $\text{inputLength} \times \text{sizeof(float)}$ bytes of global memory write occurred when copying the output data from device to host.

Q3

The program was run on the cse-edu cluster using following command with thread block size 512:

```
srunk -p titanxp -N 1 -n 6 --mem=32G --gres=gpu:2 --pty /bin/bash -l
```



Raw data table

Test #	Size	Import data to host	Allocate GPU memory	Copy data to device	Compute	Copy output to host	Free GPU memory	Total (only GPU)	Total (including host)
0	16	1.58198	0.219243	0.053002	0.057479	0.028676	0.148068	0.506468	2.088448
1	64	1.22658	0.153717	0.038885	0.04554	0.023313	0.136761	0.398216	1.624796
2	93	2.06253	0.156052	0.038468	0.044665	0.023509	0.113151	0.375845	2.438375
3	112	2.04189	0.131509	0.034798	0.039605	0.021266	0.097762	0.32494	2.36683
4	1120	9.72634	0.129078	0.034915	0.038584	0.020557	0.092681	0.315815	10.042155
5	9921	75.7216	0.125802	0.05157	0.038551	0.028318	0.090797	0.335038	76.056638
6	14000	106.638	0.122333	0.061644	0.038686	0.032528	0.092119	0.34731	106.98531
7	25365	190.847	0.124614	0.070601	0.039368	0.038714	0.094134	0.367431	191.214431
8	48000	339.33	0.112181	0.095793	0.0354	0.064432	0.083638	0.391444	339.721444
9	96000	676.031	0.118052	0.166538	0.037138	0.101439	0.086432	0.509599	676.540599